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jhk & ASSOCIATES

CITY OF CARSON
BICYCLE MASTER PLAN

JHK & ASSOCIATES

JANUARY, 1979

ITEM #14

INTRODUCTION

This report describes the study effort toward development of an implementable master plan of bicycle facilities for the City of Carson. Individual corridors have been studied to determine their potential for accommodating bicycles. A preliminary master plan was approved by the City Council in 1977. It is shown graphically in Figure 1.

The latest revisions to the preliminary master plan under consideration indicate the corridors considered, and the type bicycle facility to be placed along the corridor. Reasons for corridor selection are also provided together with engineering details such as accident history, bicycle and motor vehicle volume, service area, etc. Schematic layouts of the bicycle facilities were also provided to the city for review.

Previous Efforts

The approved preliminary master plan defined the following routes for further study:

1. Greenleaf Boulevard Corridor - Central Avenue to west city limits passing through S.C. Edison right of way.
2. Dominguez Channel - West city limits to south city limits.
3. Del Amo Boulevard - Wilmington Avenue to Torrance Boulevard.
4. Sepulveda Boulevard - Harbor Freeway to Water and Power Co. R/W.
5. Avalon Boulevard - Greenleaf Blvd. to Dominguez Channel.
6. Central Avenue - Greenleaf Blvd. to Del Amo Blvd.
7. Dolores Street - Del Amo - Torrance Blvd. to Sepulveda Blvd.
8. Department of Water and Power R/W - Dominguez Channel to Sepulveda Blvd.
9. Alameda Street - Del Amo Blvd. to City of Los Angeles city limits.

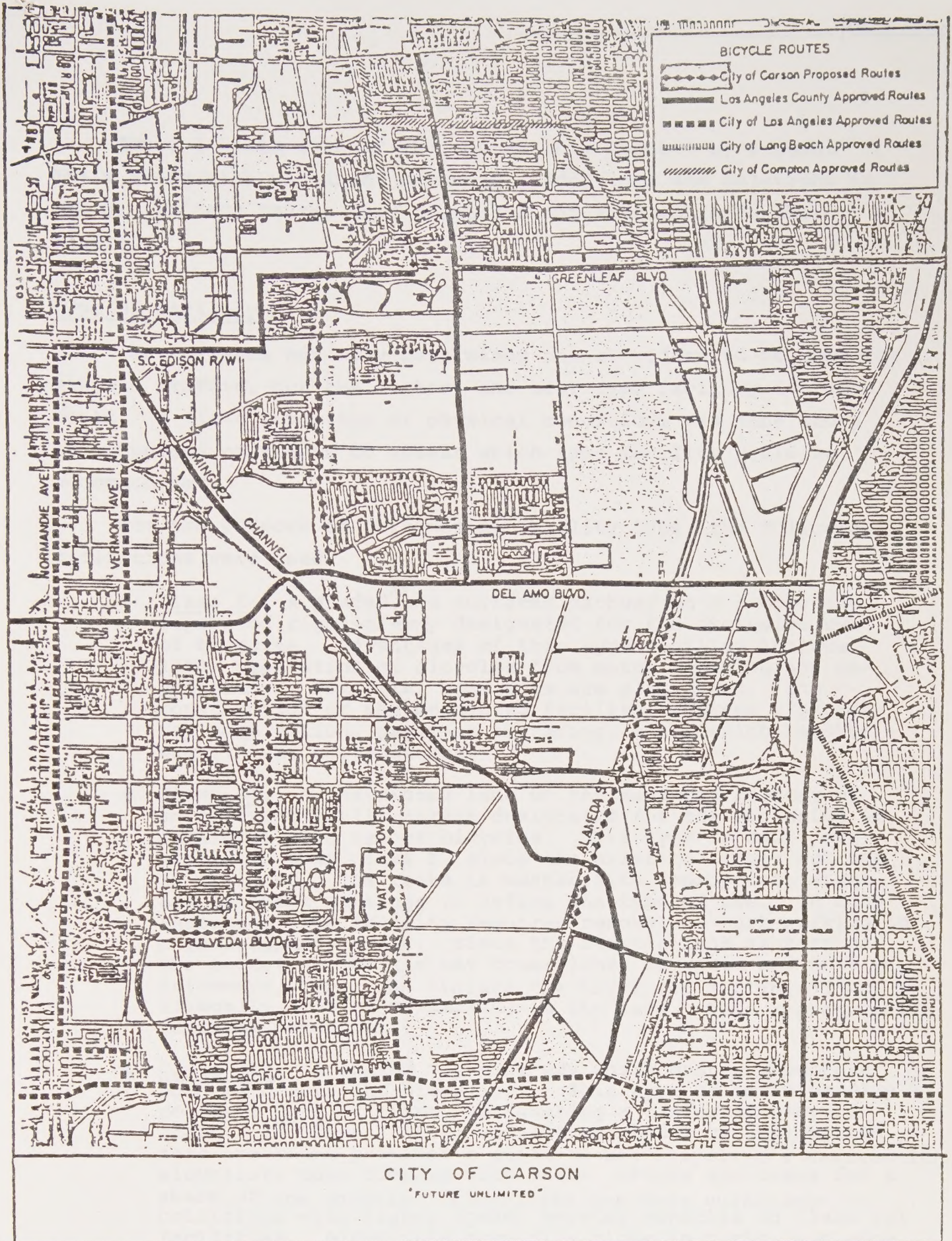



FIGURE 1
MASTER PLAN OF
BICYCLE FACILITIES



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Table 1 lists each of the routes on a segment by segment basis along with pertinent comments. Additions and deletions to the preliminary routes were discussed and studied in further detail.

Type of Facility

The analyses not only determined the corridors to be used for bicycle traffic, but the highest and best type facility for each route. A field inventory of physical conditions was made along the proposed corridors to assess which type facility could be accommodated.

For the purpose of determining facility type, the following definitions were used:

- Class I: A graded and surfaced pathway on a completely separated right-of-way designated for the exclusive use of bicycles. Advantages of this type facility include total separation of bicycles from motor vehicles and pedestrians. Potential conflicts are eliminated. The construction of the separated facility involves right-of-way acquisition, pavement surfacing, etc., which require significant expenditures.
- Class II: A restricted lane on the surfaced roadway of an existing public street designated for the exclusive or semi-exclusive use of bicycles. This type is much less expensive than Class I, since the existing street surface is utilized. The route is marked with appropriate signs and pavement markings to define the type of use. In many instances this facility requires removal of curb parking in high-occupancy areas. Since the bicycle lane is part of the street, motorists may cross lanes to enter and exit the driveways. They can violate the bicyclist's right-of-way by illegally driving or parking in the lane. This increases the accident potential.
- Class III: A shared right-of-way which must accommodate both motorists and bicyclists. This type of route usually consists only of signs, designating a preferred bicycle route. If Class I or II facilities cannot be implemented, this treatment provides a guide to the bicyclist's destination. Bicyclists must compete with autos, trucks and buses for a share of the roadway. Bicyclists are more vulnerable to collisions with higher speed, heavier vehicles on Class III facilities. Bicyclists must ride close to right-hand edge

Table 1

PROPOSED MASTER PLAN OF BICYCLE FACILITIES - JANUARY, 1979

Route	From	To	Data Elements	Comments
1. Greenleaf Blvd. Corridor	West City Limits	East City Limits		On L. A. County Master Plan; detailed alignment not defined. Potential corridor along Greenleaf, Billings, SCEdison right-of-way; serves as crosstown east-west link in north side of City; Links with elementary school.
2. Dominguez Channel	West City Limits near Victoria Street	223rd Street		Class I bicycle path using levee, crosstown recreational link serves all City major generators including Civic Center.
	223rd Street	South City Limits		Deleted from consideration by Los Angeles County and City due to legal problems in acquisition of space, easements, etc.
3. Del Amo	Easterly City Limits	Avalon Boulevard	Between 7A-6P; 6000 vehicles; Twelve bikes. Five bicycle accidents recorded during 1974-1977.	Serves as major east-west route linking major shopping area and Civic Center with residential activity and schools. East of Wilmington serves as only east-west link into Long Beach. Connects with Long Beach Bike Master Plan.

Table 1

PROPOSED MASTER PLAN OF BICYCLE FACILITIES - JANUARY, 1979

Route	From	To	Data Elements	Comments
3. Del Amo Boulevard	Avalon Boulevard	Torrance Boulevard		Non-existent roadway. City has plans within next 3 years to construct Del Amo Blvd. At that time, bicycle facilities should be included.
4. Sepulveda Boulevard	Harbor Freeway	Wilmington Avenue	Between 7A-6P; 13,900 vehicles on Sepulveda; 13 bicycles; fifth most frequently used street in City Two bike accidents in three years (1974-1977)	Provides east-west route across southerly end of City. Does not link with any major attractors to the east of Water & Power R/W. Links with Torrance master plan facility on West.
5. Avalon Boulevard	Greenleaf Blvd. extension near 169th St.	Del Amo Boulevard	Most frequently bicycle traveled street and second most hazardous. Nine accidents recorded in three year period. Avalon carries 11,600 vehicles from 7A-6P at Sepulveda; 16,000 at Carson and 17,000 at Del Amo. Bike volumes respectively during this same time period are 27, 60 and 23.	Major north-south route leading to California State University @ Dominguez Hills. Major north-south link to regional shopping center and Civic Center.

Table 1

PROPOSED MASTER PLAN OF BICYCLE FACILITIES - JANUARY, 1979

Route	From	To	Data Elements	Comments
6. Central Avenue	Del Amo Blvd.	190th Street	Two intersection bike accidents in 3-year period; wide street section.	North-south route acts as collector for entire residential area. Will be fed by Turmont Street and will link to new construction of Central N. of 190th.
	190th Street	Greenleaf Blvd. Corridor		Non-existent route to be constructed with new subdivision in area. Bicycle facility would serve as north-south collector for subdivision and would serve east side of Cal. State University. Links east-west recreational corridor. Also serves east side of residential area and is on City of Compton master plan.
7. Dolores Street	Sepulveda Blvd.	213th Street	High accident concentration for bikes(3) near Carson Community Center at Carson Street. High bicycle usage; 75 bikes between 7A-6P at 223rd Street.	North-south collector links schools, parks, and residential area to the east-west bike corridors 213th and 223rd Streets.

Table 1

PROPOSED MASTER PLAN OF BICYCLE FACILITIES - JANUARY, 1979

Route	From	To	Data Elements	Comments
8. Department of Water & Power R/W	Sepulveda Boulevard	Carson Street		Excellent corridor for recreational bicycle facility when developed into City Park areas. Will link with Dominguez Channel facility by means of on-street facility for section of Carson Street under San Diego Freeway.
9. Alameda Street	Sepulveda Boulevard	Del Amo Boulevard	Ninth highest bike accident street; 5 accidents in 3 years solely between Dominguez and Carson.	Links Dominguez area park and elementary school to City of Los Angeles corridor. City of L.A. corridor links with bi-centennial route on Pacific Coast Highway. The Alameda street facility should be a Class I (bike path) facility placed on the railroad right of way between the existing curb and the railroad tracks. A physical barrier such as fencing would be needed to separate potential conflict.

Table 1

PROPOSED MASTER PLAN OF BICYCLE FACILITIES - JANUARY, 1979

Route	From	To	Data Elements	Comments
10. 223rd Street	Figueroa Street	Water & Power R/W	Fourth most frequently used street. Heavy accident concentration between Main Street and Avalon.	East-west route that will link residential areas to Avalon Boulevard and Dolores Street. Links with Dolores and Caroldale Schools.
11. 213th Street	Main Street	Wilmington Boulevard		Serves as east-west route across City to supplement traffic.
12. Turmont Street	Avalon Boulevard	Central Avenue		Excellent east-west collector spanning residential area, local schools and parks and leading to shopping center at Avalon.
13. Main St.	Victoria	Greenleaf (extension)		Recreational connection from Greenleaf corridor to Victoria Street.
14. Victoria Street	Dominguez Channel	Wilmington Avenue		Recreational connection from Cal State Dominguez to Dominguez Channel.
15. 190th Street	Avalon Boulevard	Central Avenue		Connecting link to south side of Cal. State campus. Also collector serving residential area.
16. Santa Fe Avenue	Carson Street	Del Amo Boulevard		This is a major route serving library, park and school in Dominguez area of City.

Table 1

PROPOSED MASTER PLAN OF BICYCLE FACILITIES - JANUARY, 1979

Route	From	To	Data Elements	Comments
17. Carson Street	Avalon Boulevard	Santa Fe Avenue	<p>Second most frequently traveled bicycle street. Between 7A-6P, 15,100 vehicles & 24 bicycles.</p> <p>First most hazardous street with 17 accidents between this section.</p>	East-west link serving Carson elementary school, Civic Center, libraries (Carson and Dominguez), plus Community Center.

of the roadway and are thus susceptible to accidents resulting from storm drains, gratings, roadway debris and poor pavement joints between the gutter and roadway.

Each of the routes described in Table 1 has the potential for a certain class of bicycle facility. The type facility that can be placed along a particular route depends upon several factors including street geometrics, curb parking usage, traffic volume, proximity to major generators, right of way availability, cost to implement and accident potential.

After studying these factors a list was developed defining the highest class facility for each route. It is obvious that all routes could simply be signed (Class III). A higher degree of accommodation for the bicyclist is provided with separate lanes or a separate path. Table 2 denotes the highest level of facility for each route and comments on the implementation ability, problems, etc. associated with each route.

Figure 2, graphically depicts the results in Table 2 showing major generators such as parks and schools. Figure 2 is also the recommended master plan of bikeways that was presented for consideration by the City's policy makers.

Development of Master Plan Routes

Data specific to Carson were used to develop the master plan routes. In particular, the following data not only provided insight into the needs and problems of bicycling in Carson, but also contributed to development of a priority system for implementing bicycle facilities.

- Bicycle Questionnaire
- Bicycle/Pedestrian Accident Distribution
- Bicycle/Vehicle Traffic Counts
- Other City Experience with Bicycle Facilities

Table 2
RECOMMENDED MASTER PLAN ROUTES

Route	From	To	Type Facility			Comments
			Class I Path	Class II Lane	Class III Signs	
1. Greenleaf Boulevard	West City Limits	East City Limits	X			Problems of construct- ing facility under S.C. Edison R/W. L.A. Coun- ty should spearhead construction of this route before City ini- tiates action.
2. Dominguez Channel	West City Limits	223rd Street	X			Problems in using levee but fine recreational route crossing City and linking major attract- tions.
3. Del Amo Boulevard	Easterly City Limits	Avalon Boulevard		X		Wide cross section with 23' curb lane would allow through lane plus bicycle lane without interference. Most of route is devoid of curb parking. Posted res- trictions would be needed.
4. Sepulveda Boulevard	Harbor Freeway	Wilmington Avenue			X	Class II only if park- ing prohibited; high occupancy level of parking along primarily industrial and strip commercial land uses. Signs only if this route is to be consi- dered.

Table 2

RECOMMENDED MASTER PLAN ROUTES

Route	From	To	Type Facility			Comments
			Class I Path	Class II Lane	Class III Signs	
5. Avalon Boulevard	Greenleaf (extension)	Del Amo Blvd.	Potential for east side of college between 190th & Victoria	X		Wide cross section with wide curb lanes; Frontage Road discontinuous but provides room to place lanes away from main street.
6. Central Avenue	Del Amo Blvd.	190th Street		X		Serves as major link between residential sub areas in area north of Civic Center.
	190th Street	Greenleaf Corridor	X			When new roadway constructed to Greenleaf, provide bicycle path.
7. Dolores Street	Sepulveda Blvd.	213th Street			X	Wide street 56' wide with parking. Bike lane can be placed next to parking lane. No need to restrict parking.
8. Department of Water & Power R/W	Sepulveda Boulevard	Carson Street	X			To be constructed as parks develop in this corridor.
9. Alameda Street	Sepulveda Boulevard	Del Amo Boulevard	X			Wide section between the curb and railroad tracks to place Class I facility.
10. 223rd Street	Figueroa Street	Water & Power R/W			X	Need to investigate for possibility of parking removal to provide Class II.

Table 2

RECOMMENDED MASTER PLAN ROUTES

Route	From	To	Type Facility		Class III Signs	Comments
			Class I Path	Class II Lane		
11. 213th Street	Main St.	Wilmington Avenue			X	Feeder route only; low bike volume.
12. Turmont Street	Avalon Boulevard	Central Avenue			X	Class II unlikely because parking in residential area would have to be prohibited.
13. Main St.	Victoria	Greenleaf			X	Feeder route only; not even feasible route if Channel & Greenleaf corridors not constructed.
14. Victoria	Dominguez Channel	Wilmington Avenue			X	Class II only if parking in front of college removed which is highly improbable. Better to place Class I inside college right-of-way or simply sign as Class III route.
15. 190th Street	Avalon Boulevard	Central Avenue		X		Feeder route for college and residential area. Take parking off north side to provide Class II for W.B. bicyclists.

Table 2

RECOMMENDED MASTER PLAN ROUTES

Route	From	To	Type Facility			Comments
			Class I Path	Class II Lane	Class III Signs	
16. Santa Fe Avenue	Carson Street	Del Amo Blvd.		X		Remove parking to provide Class II.
17. Carson Street	Avalon Boulevard	Santa Fe Avenue		X		Parking must be removed throughout so that Class II route can be provided.
18. Chico Ave. Leapwood Avenue	213th St. Dominguez	Dominguez St. Del Amo Blvd.			X	These residential streets serve to take bicyclists north-south between Del Amo and Carson instead of using the highly traveled section of Avalon Boulevard.

Bicycle Questionnaire

A bicycle usage survey in Carson was conducted to determine the characteristics of bicycle ridership in the City, define the citizens' attitudes toward bicycle facilities, and to identify the principal riding corridors and hazardous corridors.

The questionnaire was developed by JHK in concert with the City and distributed in a City Parks and Recreation Newsletter to over 25,000 households in Carson. The response from a statistical basis was tremendous. Over four percent of the population responded. Of those, almost all voluntarily placed their return address on the filled-out questionnaire.

The results of the questionnaire are provided in Appendix A of this report. Some of the key points regarding the responses are as follows:

1. There are approximately 2 bicycles/respondents household.
2. 57% use bicycles on weekends.
3. Bicycle riders average 3.4 miles/trip.
4. While many trip purposes are defined, exercise, touring/recreation and home related errands ranked 1, 2, 3. Commuting was ranked fourth.
5. Avalon, Carson, Main, 223rd Street were most frequently used bicycle streets.
6. Carson, Avalon, Main, Sepulveda and Wilmington were considered most unsafe streets.
7. Bike facilities along major arterials, through parks and recreation areas and connecting to adjacent cities ranked 1, 2, 3 in preferable bicycle facility locations.
8. Bikeways to Civic Center was least critical.
9. Over 91% of respondents were in favor of bicycle facilities for Carson.

The above indicators along with unsolicited written comments from 480 or 46% of the respondents indicated concern over the need for safer riding conditions for bicyclists.

Bicycle/Pedestrian Accident Distribution

The City conducted a Pedestrian Safety Study under the auspices of an Office of Traffic Safety Grant recently. The study indicated the distribution of bicycle and pedestrian accidents by street for the years 1975 and 1976. 1977 accidents were included also from computer printouts made available in early 1978.

Table 2 mentions some of the accident statistics and patterns found in reviewing these data. Below is a sample of the results:

1. Majority of accidents occurred at intersections.
2. Carson Street and 223rd Street exhibited heavy accident concentrations.
3. In the Dominguez area intersections with Alameda Street each had accidents associated with them.
4. Main Street was indicated as having a higher occurrence of ped/bike accidents than other arterials.

The accident distribution assisted in weighting actual occurrences with those believed to be "unsafe" by questionnaire respondents. Simply because an arterial carries a high volume of vehicle traffic did not indicate that there was a ped/bike accident problem. The absence of or infrequency of travel may well have been contributing to this.

Bicycle/Vehicle Traffic Counts

Bicycle counts together with motor vehicle counts were taken at six locations within Carson to determine the existing number of bicycles using major corridors. The counts were taken on typical weekdays between 7AM and 6PM. Spot counts on Saturdays were taken during the 9AM to 10AM and 12NOON to 2PM hours at each of the locations.

Appendix B has the tabulated results. It can be seen that bicycle volumes along a particular street are very low during weekdays. The greatest concentration of bicyclist was around school areas, depicted by the 75 N-S bikes and 67 E-W bikes at 223rd and Dolores Streets.

Based on past experience, a low volume of bicycle activity is any facility carrying less than 100-150 bicycles for a twelve hour period. Bicycle volumes in the 150-500 range indicate potential for expansion if a facility is provided. The lower volume ranges indicate sporadic ridership to and from schools.

Weekend volumes are even more scattered because trips range closer to the user's home. The spot counts indicated between 15 and 45 bicycles at the six locations studied for the three hour period.

The small sampling of bicycle counts on major corridors is typical of the major streets in any City, with or without bicycle lanes. Weekday ridership is usually low and limited to users needing to cross an arterial to reach a school or park. There are no heavy hourly concentrations.

Other City Experience with Bicycle Facilities

In order to determine how bicycle lanes and/or paths were operating after installation, JHK polled approximately 15 agencies. The safety of bicycle lanes, liability, studies of increased ridership, etc. were questions asked of persons responsible for bicycle activity. The results and comments from each agency are shown below:

CITY OF TORRANCE

- Actively pursuing bicycle lane, path and routing. City feels lanes are safer than no facility. City uses sidewalks for bicycle lanes; no after studies to support safety beliefs.

CITY OF COMPTON

- No active plan for placement of bicycle lanes.

CITY OF LONG BEACH

- Very few bicycle lanes placed on streets in City. Bicycle path or signing alone used sparingly. Lanes only used when absolutely necessary to link route or path.

LOS ANGELES COUNTY

- Efforts concentrated on signing and bicycle paths rather than lanes. Problems of removing parking is a chief concern. Also continuity of route where County enters City is a problem. If City doesn't comply, the County route is a small piece of facility going nowhere.

CITY OF LOS ANGELES

- Efforts concentrated primarily on signed routes and bicycle paths within Edison, Water and Power, Flood Control channels.

CITY OF HUNTINGTON BEACH

- Extensive system of bicycle lanes and paths. Together with education and enforcement, bicycle lanes have become safer than unmarked routes. This is belief of City Staff without formal "before-after" study.

CITY OF PALO ALTO

- Extensive bicycle facility network. High increase in accidents when lanes first installed. Reduced accident pattern after period of adjustment. Concentrations primarily at intersections. Problems with sidewalk bicycle lanes; high accident areas. Overall impression favorable toward lanes where space available.

CITY OF TEMPE, ARIZONA

- Study conducted by Arizona State University indicated that after bicycle facilities installed accidents were reduced on those facilities with special treatment for bikes.

CITY OF DAVIS

- Study showed that experienced bicyclist chose to use bicycle lane and path over no facility at all. Over 99% of study, respondents prefer facility to none at all.

CITY OF SANTA BARBARA

- Bicycle oriented City conducted studies of accidents involving bicycle/vehicle and found that providing facilities where space was available did reduce potential for accidents.

CITY OF FOUNTAIN VALLEY

- Bicycle lanes most effective on continuous 1/4 mile segments where sub-division block walls extend length of street. Thus access to bicycle lane not infringed upon except at intersections.

In almost all of the agencies contacted, there were some indications of a law suit either pending or settled involving a bicyclist being injured. Most respondents believed that as long as the bicycle lane or path was properly designed using what are now the state-of-the-art standards, that liability would be lessened or eliminated. However, few if any of the Cities have taken the time and effort to define the impact of the bicycle lane in reducing accidents.

Studies conducted on a sample bicycle lane by JHK in Riverside, California in 1974 indicated a reduction in accidents for a short, six month period after bicycle lane installation. However, the reduction was from one to zero accidents, not a significant reduction.

Thus, it can be seen that there is variation as to whether or not bicycle lanes should be installed. Various agencies have adopted unofficial beliefs on the facilities' operations. Where bicycle lanes have worked, it appears that the community has had extensive education, and enforcement efforts backing up the engineering.

Implementation Plan

A ranking of the routes established in Table 2 was developed realizing the needs and problems that may well be found when the approval process of implementing the revised plan goes into effect.

JHK has chosen an approach to implementation that it believes is realistic and that affords the City the option of moving forward on bicycle facility implementation at its own pace. The approach is premised on the fact that only so many dollars are available at this time to accomplish bicycle facility implementation. The City has received approximately \$45,000 to date toward bicycle implementation. It stands to receive approximately \$15,000 per year for these type of activities in the future from bicycle grants.

Since there is a question as to the "safety" of installing a bicycle lane and the liability of same, JHK believes that implementation should proceed as follows:

1. Install "BICYCLE ROUTE" signs on all routes so designated in the master plan using the accumulated funds now available. This would establish a Class III routing system.
2. Implement a test section of Class II bicycle lane, preferably on Del Amo Boulevard. Use available funds for same.
3. If received favorably after at least a one year evaluation, continue to implement Class II routes. If not, choose new test section or defer from Class II considerations entirely.
4. Implement Class I bicycle paths only after careful evaluation of dollar benefit. Questions to be answered! Who will pay major share of Dominguez Channel construction? When will L.A. County build Greenleaf corridor?

There is flexibility in the priority system. Should the City build Del Amo Boulevard, for example, funds to incorporate bicycle paths or lanes can be set aside. Likewise, should linear parks be developed along the Water and Power rights of way the City could do the bicycle facility design and implementation accordingly.

In this manner of implementation, the City begins its bicycle facility program with route signing only, and progresses to testing of bicycle lanes. It can then work toward informing and educating its citizens in the proper methods of operating within a bicycle/motor vehicle environment, ultimately leading to a full program of bicycle facilities, education, and enforcement of operating violations.

The priority improvement plan is presented in Table 3 together with associated costs to implement.

Table 3

BICYCLE MASTER PLAN PRIORITY IMPLEMENTATION PROGRAM

ROUTE(S)	LIMITS	ESTIMATED COST	TIMING	COMMENTS
All Class III designated routes on master plan plus Class II routes if money available to provide linkages.			As soon as City Council approves master plan.	Bicycle route signs spaced at approximately 500 to 750 foot spacing where dense cross street conditions exist; approximately 1/4 mile spacing in less dense areas
Routes include:				
Victoria St.	Dominguez Channel to Wilmington Ave.			Cost breakdown as follows:
Main St.	Walnut St. to Victoria St.			
Turmont St.	Avalon Blvd. to Wilmington Ave.			<u>Material</u> Signs, posts, bands, etc.
Chico Ave.	215th to Dominguez St.			
Leapwood Ave.	Del Amo to Dominguez St.			\$8500
Carson St.	Alameda St. to Santa Fe Ave.			<u>Labor</u> To install signs using City Forces.
Dolores St.	213th St. to Wilmington Ave.			
Sepulveda Blvd.	Harbor Freeway to Wilmington Ave.			\$17,500
213th St.	Main St. to Wilmington Ave.			
223rd St.	Figueroa to Dept. of Water & Power R/W			
		Subtotal Class III \$ 26,000		

Table 3

BICYCLE MASTER PLAN PRIORITY IMPLEMENTATION PROGRAM

ROUTE(S)		LIMITS	ESTIMATED COST		TIMING	COMMENTS
<u>Class II Routes</u>			Material	Labor	Test section as soon as Council approves master plan. Remainder in priority order as necessary.	All of these could be signed immediately if funds available. Total cost to sign these routes as Class III is as follows: Material = \$ 5,200 Labor = \$12,600 Total \$17,800
Avalon Blvd.	Greenleaf Corridor to Del Amo Blvd.		4,000	1,500		
Del Amo Blvd.	Avalon Blvd. to East City Limits		5,200	2,800		
Central Avenue	Del Amo Blvd. to 190th Street		1,000	800		
Santa Fe Ave.	Del Amo Blvd. to Carson Street		1,300	700		
Carson Street	Avalon Blvd. to Alameda Street		4,000	1,500		
190th Street	Avalon Blvd. to Wilmington Ave.		2,500	1,500		
	Subtotal		\$18,000	\$8,800		
			Subtotal Class II			
			26,800			
			\$			
<u>Class I Routes</u>						
Del Amo Blvd.	Main Street to Avalon Boulevard		13,600	14,400	As soon as City of Carson develops design plans & implements. Approximately 5 years.	New road to have either paths or lanes incorporated into it. If lanes, then material 6,000. Sign, paint, Labor 13,000
	Subtotal		\$28,000*			\$19,000

Table 3

BICYCLE MASTER PLAN PRIORITY IMPLEMENTATION PROGRAM

ROUTE(S)	LIMITS	ESTIMATED COST		TIMING	COMMENTS
		Material	Labor		
Water & Power Right of Way	Dominguez Channel to Sepulveda Blvd.	6,000	11,000	As soon as City Parks and Recrea- tion Dept. develops working linear park for this corridor and coordinates with Water & Power personnel.	Install bicycle paths with each park development in this corridor.
	Subtotal	\$17,000*			
Central Avenue	190th to Greenleaf	16,000	20,000	At time of con- struction of new facility.	
	Subtotal	\$36,000			
Dominguez Channel	Victoria St. to 223rd St.	81,000	186,000	Either initiate project in Carson to start County & other cities in conti- nuous routing of channel or defer until County develops.	
	Subtotal	\$267,000			

Table 3

BICYCLE MASTER PLAN PRIORITY IMPLEMENTATION PROGRAM

ROUTE (S)		LIMITS		ESTIMATED COST		TIMING	COMMENTS
Greenleaf	Main Street to Central Ave.	Material	Labor	As soon as L.A. County dev- elops corridor, consider imple- mentation.			
		19,000	18,000				
		Subtotal	\$37,000*				
Alameda Street	Sepulveda Blvd. to Del Amo Blvd.	36,000	42,000	As soon as funds become available. Must be limited to Del Amo, Sepulveda and Carson to be effective.			
		Subtotal	\$78,000*				
		Subtotal Class I				\$463,000	
		Total Cost, Class I, II & III					
						\$515,800	

*Right of Way to be provided by others or not included in cost estimates.

APPENDIX A

Results of Bicycle Survey
City of Carson, California

April, 1978

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1. INTRODUCTION

The following technical memorandum documents the results of a bicycle usage survey conducted in the City of Carson, California by JHK & Associates. This survey was undertaken to develop a data base to assist in developing a Bicycle Facilities Master Plan.

The specific purpose of the survey was to: 1) determine the characteristics of bicycle ridership in the City (when, where, why, and how often bicycles are used); 2) define the attitudes of Carson citizens with regard to the installation of bicycle facilities; and 3) identify the principal bicycle corridors and those streets perceived by the public as being hazardous to the bicyclist.

APPROACH

JHK & Associates, in cooperation with the City of Carson, developed a survey questionnaire for distribution to the local citizenry. To the extent possible, the questionnaire was structured in the form of multiple-choice questions for the convenience of the respondent and so that the individual responses could be easily compiled and analyzed.

Approximately 25,000 survey questionnaires were distributed to Carson households by the City's Parks and Recreation Department in January 1977. Exhibit 1 presents a reproduction of the survey form used.

The responses on the returned questionnaires were compiled by hand in order to document the surprising number of "Comments" that were contributed by respondents. The number of questions asked was purposely limited to ten since it is generally accepted that the general public is more likely to complete a short, simple, one-page form. Consequently, only those questions that would

CARSON BICYCLE INTEREST SURVEY

1. How many bicycles does your family own?
☐ None ☐ One ☐ Two ☐ Three or more
2. How often do the members of your household use their bicycle?

	1st Bike	2nd Bike	3rd Bike
Almost every day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 or 3 times per week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Once a week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Less than once a week	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Do they ride most only:
Weekdays ☐ ☐ ☐
Weekends ☐ ☐ ☐
4. About how many total miles do your family members ride in one day?
Up to one mile ☐ ☐ ☐
2 to 4 miles ☐ ☐ ☐
4 to 6 miles ☐ ☐ ☐
6 to 8 miles ☐ ☐ ☐
Over 8 miles ☐ ☐ ☐
5. For what purpose(s) does your family ride their bike (Indicate in the box the importance of each use):

	Very Important	Important	Not Important
Commuting to school or work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Touring/Recreation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exercise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Save time and/or money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job-related errands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Home-related errands	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Please list the three Carson city streets most frequently used by your family when riding your bike.

7. Please list the three Carson city streets you believe to be most UNSAFE for bike riders.

8. To what extent would bikeways (separately designed lanes or paths for bicycle use) increase the number of times your family would use their bicycle in the following areas:

	No Effect	Moderate Effect	Positive Effect	Extremely Favorable
Bikeways in the Civic Center Area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bikeways along major arterials such as Avalon, Sepulveda and Alameda	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bikeways along residential or secondary streets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bikeways through recreation areas or parks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bikeways along the Dominguez Channel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bikeways connecting adjacent cities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. How important do you feel bicycle paths are to bicycle safety?
☐ Important ☐ Slightly Important ☐ No Difference ☐ No Opinion
10. Any additional comments _____

materially contribute to the analysis and ultimate development of an effective bicycle program in the City were included. This meant that questions of general interest, but of marginal functional value had to be eliminated.

AREA CHARACTERISTICS

The City of Carson has 19.2 square miles of area within its incorporated boundaries. Lying immediately southeast of the City of Los Angeles, it is located in the southern section of Los Angeles County. A map of the City and adjacent area is given in Exhibit 2.

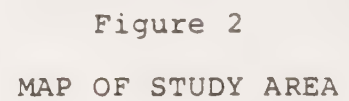
According to the California Statistical Abstract*, the population of the City has grown from 71,513 and 78,600 in the seven year period from 1970 to 1977, about a ten percent increase. Approximately 55% of the population is 18 years of age or older with only 3% over 65 years. Almost 11% are under five years of age. The median age in the City is 21.9 years.

The area may be characterized as industrial/residential. Of the 18,475** total housing units, 75% are owner-occupied. The average number of persons per housing unit is 4.0. Family units within the area total 16,296 of which 11,613 have children under 18 years of age (71%).

The civilian labor force totals 26,681 of which 56% are employed in manufacturing (39%) and wholesale and retail (17%). Less than 1% of the employed labor force uses public transit for commuting to work.

*California Statistical Abstract, State of California, Sacramento, California, 1977.

**1970 Census of Population, PC(1)-C6 California, General Social and Economic Characteristics, Bureau of Census, April 1972.



jhk & associates

Carson Master Plan of Bikeways

The climate is moderate with mean temperatures of 54°F during January to 69°F during June. The mean annual precipitation is 12.36 inches with sunshine possible 73% of the year. The temperate weather, coupled with the median age, "family" orientation of the community, and low-usage of public transit portray a community with an inherent potential for high bicycle usage.

2. SURVEY RESULTS

Of the 25,000 questionnaires distributed, 1031 completed forms were returned. This represents a high average response rate (four percent) for questionnaires of this type. It may be postulated that this high rate of response reflects a correspondingly high level of community interest in safe and convenient bicycle facilities.

It is also interesting to note that an inordinately large number of respondents included their name and return address on the survey form. Experience with other surveys indicate that most citizens typically prefer to remain anonymous. While no count was made of the number of return addresses received, it appears that 60 to 75 percent of the forms contained this information. It is suggested that the city retain a mailing list of the name and addresses of responding families for ultimate use in advising these concerned parties of public hearings relative to the bicycle plan acceptance.

Also atypical was the number of questionnaires with comments (Item 10). Since developing and writing out a narrative comment represents an extra effort or inconvenience to the respondent, it was gratifying that almost half of the questionnaires contained a generally positive comment.

RESPONSE COMPILATION

The numerical results of the individual survey items together with a short introductory explanation of the question and its relationship to the development of a Master Bicycle Plan is given below.

Bicycle Ownership

The first item asked was "How many bicycles does your family own?" Space was supplied to answer: none, one, two, three or more. The question was intended to quantify the incident of bicycle ownership in the City.

The numerical breakdown of responses and the percent of the total sample is given below in Exhibit 3.

Exhibit 3. Bicycles Owned

<u>No. of Bicycles</u>	<u>Responses</u>	<u>Percent of Total</u>
None	137	13%
One	189	18
Two	284	28
Three or more	<u>421</u>	<u>41</u>
	1,031	100%

It can be seen that the number of responses received for each category increases with the number of bicycles owned. The most obvious conclusion is that interest in bicycle facilities is more pronounced among high ownership families. Because this interest factor tends to bias the results, it should not be assumed that these percentages are a representative cross-section of the entire community. (That is, it would be inappropriate to suggest that 87 percent of the 25,000 sampled own one or more bicycles.)

The 894 respondents owning bicycles represents a bicycle population of 2,020 or 2.25 bicycles per responding owner. (This figure drops to 1.95 when all respondents are considered).

As a matter of potential future interest, the returned questionnaires were segregated and recorded by number of bicycles owned. This would allow a comparison between the characteristics of those owning a single bicycle and those reporting multiple

ownership. These compilations are given in the supporting appendix. The cumulative totals are provided below.

Frequency of Use

The second question asked was, "How often do members of your household use their bicycle?" Frequency of use is one of the factors used in defining the characteristics of the bicycling public. Exhibit 4 summarizes the responses.

Exhibit 4. Frequency of Bicycle Use

<u>Frequency</u>	<u>Responses</u>	<u>Percent of Total</u>
Every day	603	32.5
2-3 times/week	489	26.4
Once/week	273	14.7
Less than once/week	<u>490</u>	<u>26.4</u>
	1,855	100.0%

The high incident (32.5 percent) of those using their bicycles daily reflects the correspondingly high incident of responses from those owning multiple bicycles.

Time of Use

To the question of when bicycles were used (item 3), 43 percent answered weekdays, while 57 percent indicated weekends. Although the question asked when they rode most--either weekdays or weekends--a number of respondents marked both boxes.

Trip Length

When asked how many total miles were ridden in one day, the 1,702 responses were divided as shown in Exhibit 5.

Exhibit 5. Daily Mileage Travelled

<u>Distance</u>	<u>Responses</u>	<u>Percent of Total</u>
Up to one mile	622	36.5%
2 to 4 miles	557	32.7
4 to 6 miles	245	14.4
6 to 8 miles	118	7.0
Over 8 miles	<u>160</u>	<u>9.4</u>
	1,702	100.0%

Of the bicycle population represented by this sample (2,020 bicycles owned) 84 percent responded to this question (1,702 responses). A number of those not responding commented that bicycle riding was limited to neighborhood sidewalks (small children), within mobile home parks (elderly), etc. for safety reasons.

Using midrange factors, an average day's mileage can be calculated as follows:

$$\begin{array}{rcl}
 .5 \times 622 & = & 311 \\
 3 \times 557 & = & 1,671 \\
 5 \times 245 & = & 1,225 \\
 7 \times 118 & = & 826 \\
 9 \times 160 & = & \underline{1,440} \\
 & & 5,473
 \end{array}
 \qquad
 \begin{array}{rcl}
 5,473 \div 1,702 & = & 3.4 \text{ miles} \\
 & & \text{average mileage}
 \end{array}$$

Trip Purpose

A number of trip purposes were defined and respondents were asked to rate each purpose as "very important," "important," or "not important". To obtain a weighted overall ranking of trip purpose, "very important" responses were given a value of 2, "important" a value of 1, and not important a value of 0. The number of responses, the percent of total for each category and the weighted value in order of importance is given in Exhibit 6.

Exhibit 6. Bicycle Usage

Purpose	Very Important No. Responses/Percent	Important No. Responses/Percent	Not Important No. Responses/Percent	Weighted Value	Order of Importance
Commuting to Work or School	162/36.6%	86/19.5%	194/43.9%	410	4
Touring/ Recreation	331/46.4%	298/41.8%	84/11.8%	960	2
Exercise	442/53.3%	278/35.1%	92/11.6%	1,122	1
Save Time/ Money	111/28.2%	118/30%	165/41.8%	340	5
Job-related errands	42/13%	53/16.4%	228/70.6%	137	6
Home-Related Errands	189/36.4%	210/40.5%	120/23.1%	588	3

It can be seen "touring/recreation" riding almost equals the sum of all other trip purposes. When combined with "exercise", the weighted value (2082) overwhelms the total of all other trip purposes (1475).

City Streets Most Frequently Used

When asked to list the three city streets most frequently used, Avalon, Carson, and Main commanded an imposing lead on all other bicycle corridors. Exhibit 7 presents the top ten city streets mentioned most often.

Exhibit 7. Most Frequently Used Streets

<u>Street</u>	<u>No. of Responses</u>
Avalon	365
Carson	324
Main	233
223rd	155
Del Amo	128
Figueroa	96
Sepulveda	81
213th	65
Wilmington	64
190th	61

Almost 80 streets were identified one or more times. Major arterials, however, were clearly preferred.

City Streets Considered Unsafe

The ten city streets considered to be the most hazardous to bicyclists are shown in Exhibit 8. As expected, these streets closely parallel those frequently used.

Exhibit 8. Most Hazardous Streets

<u>Street</u>	<u>No. Responses</u>
Carson	568
Avalon	543
Main	324
Sepulveda	130
Wilmington	125
Del Amo	99
190th	85
223rd	83
Alameda	46
Figueroa	42

Carson, Avalon, and Main are by far the most hazardous as perceived by the respondents. Fifty streets were listed as hazardous by one or more respondents.

Evaluation of New Facilities

To identify specific areas in which bicycle facilities could be expected to increase bicycle usage, respondents were asked to judge the effect of six potential bikeway locations. Exhibit 9 summarizes the results and provides a weighted ranking ("no effect" = 0; moderate effect = 1; positive effect = 2; and extremely favorable = 3).

It is interesting to note that the responses indicating an "extremely favorably" effect range from 25 to 50 percent while those indicating "no effect" range from 10 to 28 percent. This appears to indicate a predominant feeling of acceptance of all bikeways identified. It should be mentioned, however, that the comments showed that a considerable number of respondents may have interpreted "bikeways" to mean a separated facility (i.e. Class I) despite the definition given in the questionnaire.

Exhibit 9. Evaluation of Bikeway Locations

Location	No Effect No. Responses/Percent	Moderate Effect No. Responses/Percent	Positive Effect No. Responses/Percent	Extremely Favorable No. Responses/Percent	Weighted Value	Order of Importance
Bikeways in Civic Center	215/28%	219/28.6%	141/18.5%	189/24.7%	1,068	6
Bikeways along major arterials	83/10%	112/13.6%	211/25.6%	419/50.8%	1,791	1
Bikeways along residential or secondary streets	124/14.9%	224/27%	229/27.5%	254/30.6%	1,296	4
Bikeways through recreational areas/parks	94/11.5%	145/17.7%	197/24.1%	381/46.6%	1,682	2
Bikeways along Dominguez Channel	200/26%	141/18.3%	159/20.6%	271/35.1%	1,272	5
Bikeway connecting adjacent cities	155/19.9%	143/18.4%	154/19.8%	325/41.8%	1,426	3

Importance of Bikeways

The respondents participating in this survey overwhelmingly endorsed the importance of bicycle paths in terms of safety. Of the 1014 answering this question, 922 (91 percent) felt that bicycle paths were important to safety; 24 (2 percent) felt bikeways were slightly important; 12 (1 percent) felt they made no difference and 56 (6 percent) indicated no opinion.

RESPONDENT COMMENTS

As mentioned earlier, almost half the questionnaires contained additional comments. There are several basic community concerns that are apparent from these comments. These can be categorized as general, engineering, enforcement and safety, and economic. Each of these categories may contain both "pro and con" statements, and may cover several aspects of the category.

It was obviously impractical to list each comment; consequently, objective judgment was exercised in separating the comments into descriptive statements under each category. The 480 survey forms containing additional comments were compiled as described under the following category headings.

General

Those comments which concerned the broad concept of implementing bikeways in the City of Carson were included in this category. In addition, this category also includes comments of general interest to the survey. Representative statements and the number of responses approximating these statements are given below.

1. Urge implementation of bikeways as beneficial to both motorist and bicyclist in terms of safety, energy conservation, and exercise.

Responses = 261

2. Would use bicycle(s) more if there were a safer place (bikeways) to ride.

Responses = 119

3. If there were more bikeways, there would be fewer accidents.

Responses = 19

4. Appreciate the concern of the City in conducting a survey of this type. Keep up the good work.

Responses = 23

5. Bikeways are useless and would not be used.

Responses = 6

6. Mopeds should (should not) be allowed to use bikeways.

Responses = 10(8)

7. Should also provide skateboard facilities.

Responses = 9

Engineering

This category covers those statements of major concern to planners and traffic engineers in designing a Master Bikeway Plan.

1. Separate bicycle facilities are not only desirable, but will increase safety for both bicyclist and motorist.

Responses = 30

2. Bicycles should not be allowed on major streets.

Responses = 19

3. Bikeways should be installed on all major streets.

Responses = 11

4. Parking should be removed to allow space for bikeways and to protect bicyclists from suddenly-opened car doors.

Responses = 7

5. Bikeways would interfere with on street parking.

Responses = 4

6. Need better lighting, reflectors on street, and rest stops for bicyclists.

Responses = 8

7. The roadway needs better maintenance to remove the glass and other litter that represent a hazard to the bicyclist.

Responses = 10

8. Bicycles should (should not) be allowed to ride on sidewalks.

Responses = 6(2)

9. Protected bikeway should be installed around the (name) school for safety of young bicyclists.

Responses = 24

Enforcement and Safety

There was a significant show of concern about the lack of adequate enforcement from the perspective of the bicyclist as well as the motorist. The statements seemed to be made with more emotion and stronger language than those involving other categories. The responses in this category also mentioned the need for police protection of the bicyclist in high crime areas, from unleashed dogs, and enforcement of equipment requirements.

1. Bicyclists constantly disregard traffic laws and cause many accidents. Police should enforce laws equally and cite and fine bicyclists for flagrant violations.

Responses = 40

2. Bicyclists need protection from automobiles, buses, and trucks travelling above the speed limits and making other erratic and illegal moves on city streets.

Responses = 42

3. Don't ride bicycles anymore since (____ number) have been stolen and there are no facilities to protect the parked bike or police deterrent.

Responses = 18

4. The police should make sure that bicyclists adhere to laws regarding safety equipment on bicycles (e.g. lights, reflectors, etc.)

Responses = 14

5. Pedestrians are in as much danger from bicycles, skateboards, and mopeds as they are from automobiles.

Responses = 12

Education

This category basically addressed the need for public awareness of the laws involving the rights and privileges of the bicyclist. It was apparent that motorists as well as bicyclists are confused over such general rules of the road as whether bicyclists should ride with or against traffic, the use of sidewalks, etc. While many were concerned with educating young bicyclists, the comments, per se, indicated a need for adult education as well.

1. Need more bicycle safety education programs in the public schools.

Responses = 31

2. Bicyclist should be licensed (as motorist) and/or required to pass a written test.

Responses = 8

Economics

This category was limited to those questioning the cost and the priority of bikeways. It should be noted that even those comments which implied that the benefits may not be worth the cost often judged bikeways to be "important" to bicycle safety (Item 9 on the questionnaire).

1. Will installing bikeways raise our taxes?

Responses = 8

2. Lets fix our streets before bikeways are implemented.

Responses = 4

ANALYSIS OF RESPONSES

The responses to the survey questions and the comments recorded comprise a strong community approval of developing and implementing a Master Bicycle Plan. It may be argued that a significant number of responses represented only that portion of the community with a special interest in bicycling and did not reflect a representative cross-section of the community. While this is a logical assumption, it is significant to note that the number of responses that could be considered as militantly-opposed to bikeways was minimal (less than 10). Usually, those with strong "anti" feelings take the opportunity to express their concerns. It, therefore, appears that there is little real opposition to bikeways at the present time.

It is questionable that the typical respondent recognized the difference in the various classes of bikeways. The enthusiasm for bikeways, in a number of cases, appeared to be based on the assumption that bikeways were separate (or protected) facilities.

The responses exhibited a desire for family bicycling opportunities. That is, a number of comments centered around providing adequate facilities within Carson for family outings

so that it would no longer be necessary to travel to, for example, Redondo Beach or Long Beach.

While recreational bicycling or touring to adjacent cities was considered desirable, safety on city streets tended to command more attention. The concern was not limited to bikeways; in fact, equal attention was directed to enforcement of traffic laws and safety education. Conflict between motorists and bicyclists is a universal problem not unique to Carson. It is generally agreed that these conflicts, both in philosophy and on the street can be ameliorated through education and enforcement.

Since education and enforcement are long-range (education) and expensive (enforcement), implementation of bikeways have become the most expedient, and popular solution to increasing bicycle safety. Unfortunately, bikeways alone should not be expected to function as the sole safety activity.

Appendix A. Compilation of Results
by Bicycle Ownership

A-1

Exhibit A-1. Frequency of Bicycle Use

Frequency	Responses						Total
	One Bicycle	Two Bicycles		Three or More			
		1	2	1	2	3	
Almost every day	65	97	52	199	115	75	603
2 or 3 times/week	39	67	77	83	123	100	489
Once/week	20	41	47	35	62	68	273
Less than once/week	58	67	99	54	76	137	491

Exhibit A-2. Time of Use

Time	Responses						Total
	One Bicycle	Two Bicycles		Three or More			
		1	2	1	2	3	
Weekdays	95	140	103	235	169	110	852
Weekends	114	160	177	185	224	270	1130

Exhibit A-3. Mileage Travelled (Typical Day)

Distance	Responses						Total
	One Bicycle	Two Bicycles		Three or More			
		1	2	1	2	3	
Up to 1 mile	68	79	93	115	121	146	622
2-4 miles	64	94	83	118	113	85	557
4-6 miles	22	46	35	57	43	42	245
6-8 miles	8	18	16	33	25	18	118
Over 8 miles	14	21	17	35	31	42	160

Exhibit A-4. Bicycle Usage

Purpose	Very Important No. Responses/Percent			Important No. Responses/Percent			Not Important No. Responses/Percent		
	1 Bicycle	2 Bicycles	3 or More	1 Bicycle	2 Bicycles	3 or More	1 Bicycle	2 Bicycles	3 or More
Commuting to Work or School	28/43%	47/36%	87/35%	4/6%	26/20%	56/23%	33/51%	58/44%	103/42%
Touring/ Recreation	59/56%	106/48%	166/43%	34/32%	97/43%	167/43%	13/12%	16/7%	55/14%
Exercise	95/75%	135/52%	192/48%	26/20%	109/42%	143/35%	6/5%	17/6%	69/17%
Save Time/ Money	20/33%	32/29%	59/26%	15/24%	30/28%	73/33%	26/43%	47/43%	92/41%
Job-related Errands	3/6%	11/12%	28/15%	5/11%	13/14%	35/19%	38/83%	68/74%	122/66%
Home-Related Errands	34/44%	53/34%	102/35%	23/30%	61/39%	126/44%	20/26%	41/27%	59/21%

APPENDIX B

VICTORIA @ AVALON

Tues., April 11, 1978

location

TIME	N/B	N/B	E/B	E/B	S/B	S/B	W/B	W/B	TOTALS	
	Cars	Bikes	Cars	Bikes	Cars	Bikes	Cars	Bikes	Cars	Bikes
7:00-8:00	1318	1	1137	2	1339	2	618	2	4412	7
8:00-9:00	1659	0	1045	0	904	0	461	0	4069	0
9:00-10:00	743	1	778	2	663	0	350	0	2534	3
10:00-11:00	502	0	306	1	585	1	324	0	1717	2
11:00-12:00	652	1	491	1	720	0	538	1	2401	3
12:00-1:00	724	0	590	1	706	0	647	0	2667	1
1:00-2:00	554	0	441	0	847	1	376	0	2218	1
2:00-3:00	710	0	530	0	780	1	461	0	2481	1
3:00-4:00	1057	5	872	5	894	2	727	1	3550	13
4:00-5:00	1377	3	1109	1	908	1	1337	3	4731	8
5:00-6:00	1115	1	874	2	674	2	646	4	3309	9
TOTALS	N/B Cars	N/B Bikes	E/B Cars	E/B Bikes	S/B Cars	S/B Bikes	W/B Cars	W/B Bikes		
	10,411	12	8173	15	9020	10	6485	11		

TOTALS:	34,089	48
	Cars	Bikes

Sat., April 15, 1978

WEEKEND	NB + SB Bikes	EB + WB Bikes
9:00 - 10:00	7	5
12:00 - 1:00	6	10
1:00 - 2:00	3	2

223rd @ DOLORES
location

Tues., March 28, 1978

TIME	N/B Cars	N/B Bikes	E/B Cars	E/B Bikes	S/B Cars	S/B Bikes	W/B Cars	W/B Bikes	TOTALS Cars Bikes	
7:00-8:00	149	3	660	4	171	8	845	15	1825	30
8:00-9:00	172	3	537	0	137	5	554	6	1400	14
9:00-10:00	93	0	832	1	64	1	394	0	1383	2
10:00-11:00	103	0	358	1	100	1	399	1	960	3
11:00-12:00	104	2	399	2	121	3	394	2	1018	9
12:00-1:00	116	6	506	2	105	5	458	2	1185	15
1:00-2:00	121	1	433	2	97	5	384	1	1035	9
2:00-3:00	285	13	578	8	153	3	459	8	1475	32
3:00-4:00	176	6	767	3	158	4	561	5	1662	18
4:00-5:00	131	2	344	4	120	1	529	0	1124	-
5:00-6:00	85	1	590	0	84	2	482	0	1241	3
TOTALS	N/B Cars	N/B Bikes	E/B Cars	E/B Bikes	S/B Cars	S/B Bikes	W/B Cars	W/B Bikes		
	1535	37	6004	27	1310	38	5459	40		

TOTALS:	<u>14,308</u>	<u>142</u>
	Cars	Bikes

Sun., April 2, 1978

WEEKEND	NB + SB Bikes	EB + WB Bikes
9:00 - 10:00	7	6
12:00 - 1:00	9	8
1:00 - 2:00	14	11

DEL AMO @ AVALON

Wed., March 22, 1978

location

TIME	N/B	N/B	E/B	E/B	S/B	S/B	W/B	W/B	TOTALS	
	Cars	Bikes	Cars	Bikes	Cars	Bikes	Cars	Bikes	Cars	Bikes
7:00-8:00	402	0	458	0	353	0	21	0	1234	0
8:00-9:00	599	2	595	1	628	0	25	0	1847	3
9:00-10:00	631	3	482	0	599	0	33	0	1745	3
10:00-11:00	820	2	512	2	645	1	24	0	2001	5
11:00-12:00	910	0	452	2	676	4	29	0	2067	6
12:00-1:00	908	1	490	2	766	0	43	0	2207	3
1:00-2:00	958	3	532	1	881	0	36	0	2407	4
2:00-3:00	945	1	492	1	849	2	17	0	2303	4
3:00-4:00	949	1	501	0	764	1	21	0	2235	2
4:00-5:00	898	0	472	1	937	0	22	1	2329	2
5:00-6:00	990	1	755	1	958	1	50	0	2753	3
TOTALS	N/B Cars	N/B Bikes	E/B Cars	E/B Bikes	S/B Cars	S/B Bikes	W/B Cars	W/B Bikes		
	9010	14	5741	11	8056	9	321	1		

TOTALS:

23,128

35

Cars

Bikes

Sat., March 25, 1978

WEEKEND

NB + SB Bikes

EB + WB Bikes

9:00 - 10:00

1

4

12:00 - 1:00

2

4

1:00 - 2:00

3

2

CARSON @ AVALON

Thurs., March 23, 1978

location

TIME	N/B	N/B	E/B	E/B	S/B	S/B	W/B	W/B	TOTALS	
	Cars	Bikes	Cars	Bikes	Cars	Bikes	Cars	Bikes	Cars	Bikes
7:00-8:00	534	1	587	0	695	1	896	0	2712	2
8:00-9:00	526	0	537	3	625	3	560	2	2248	8
9:00-10:00	588	3	489	0	638	0	499	1	2214	4
10:00-11:00	625	2	672	0	767	3	595	0	2659	5
11:00-12:00	747	10	898	1	912	0	788	0	3345	11
12:00-1:00	732	0	871	1	854	1	690	3	3147	5
1:00-2:00	789	16	799	3	893	3	672	0	3153	22
2:00-3:00	688	1	747	1	910	7	690	4	3035	13
3:00-4:00	720	1	787	2	866	2	763	2	3136	7
4:00-5:00	707	1	749	0	782	3	682	1	2920	5
5:00-6:00	667	1	624	0	726	1	609	0	2626	2
TOTALS	N/B Cars	N/B Bikes	E/B Cars	E/B Bikes	S/B Cars	S/B Bikes	W/B Cars	W/B Bikes		
	7323	36	7760	11	8668	24	7444	13		

TOTALS:	31,195	84
	Cars	Bikes

Sun., March 26, 1978

WEEKEND	NB + SB Bikes	EB + WB Bikes
9:00 - 10:00	3	2
12:00 - 1:00	4	4
1:00 - 2:00	8	8

SEPULVEDA @ AVALON

Tues., March 28, 1978

location

TIME	N/B Cars	N/B Bikes	E/B Cars	E/B Bikes	S/B Cars	S/B Bikes	W/B Cars	W/B Bikes	TOTALS Cars Bikes	
7:00-8:00	584	7	1121	0	611	3	733	0	3051	10
8:00-9:00	504	0	769	0	429	0	588	0	2290	0
9:00-10:00	503	0	584	0	453	0	381	0	1921	0
10:00-11:00	512	0	454	2	479	1	380	0	1825	3
11:00-12:00	511	0	473	3	453	3	303	0	1740	6
12:00-1:00	602	0	559	0	532	0	364	0	2057	0
1:00-2:00	542	2	544	1	533	0	309	1	1928	4
2:00-3:00	441	4	411	2	376	2	341	0	1569	8
3:00-4:00	555	3	505	1	291	0	507	0	1858	4
4:00-5:00	708	1	1112	0	509	1	934	0	3263	2
5:00-6:00	905	0	1289	3	652	0	1247	0	4093	3
TOTALS	N/B Cars 6367	N/B Bikes 17	E/B Cars 7821	E/B Bikes 12	S/B Cars 5318	S/B Bikes 10	W/B Cars 6087	W/B Bikes 1		

TOTALS: 25,593 40
 Cars Bikes

Sat., April 1, 1978

WEEKEND	NB + SB Bikes	EB + WB Bikes
9:00 - 10:00	5	3
12:00 - 1:00	4	6
1:00 - 2:00	2	8

FINE ARTS COMMISSION (3 positions)

**OFFICIAL MINUTES,
FROM CITY CLERK'S
OFFICE.**

<u>NOMINEE</u>	<u>BY WHOM</u>	<u>1st BALLOT</u>	
Lillian Perry	B	CESM	(Appointed)
Chuck Thonney	B	CEMB	(Appointed)
William O'Leary	B	CESB	(Appointed)
Dorothy Ross	M	SMB	
Merlinda Guerrero	M		(Nomination removed by Mills)

ENVIRONMENTAL COMMISSION (4 positions)

<u>NOMINEE</u>	<u>BY WHOM</u>	<u>1st BALLOT</u>	
LaVerne Curtis	C	By unanimous consent	(Appointed)
Harry Braff	C	By unanimous consent	(Appointed)
Clyde Lockley	M	By unanimous consent	(Appointed)

Councilman Smith moved to hold the one (1) position open and to check with industry for a recommendation, seconded by Bridgers and unanimously carried.

PARKS AND RECREATION COMMISSION (3 positions)

<u>NOMINEE</u>	<u>BY WHOM</u>	<u>1st BALLOT</u>	
Marcelino Ines	B	CESMB	(Appointed)
Shirley Babbitt	B	CE	
Winston Miller	S	SMB	(Appointed)
Betty Rhone	E	CE	
Gaddis Farmer	M	SMB	(Appointed)
Tom Clayton	S		

PLANNING COMMISSION (3 positions)

<u>NOMINEE</u>	<u>BY WHOM</u>	<u>1st BALLOT</u>	
John Emeterio	C	CE	
John Tumblin	C	CESMB	(Appointed)
Tom Clayton	C	C	
Sylvia Muise	M	SMB	(Appointed)
Leroy Higginbotham	M	ESMB	(Appointed)

Mayor Pro Tem Mills requested that the present members with the addition of Sergeant Gene Brodie and Robert Jones of Dominguez College be appointed to the Public Relations Commission in order to permit the committee to continue with their work and so moved, seconded by Bridgers and unanimously carried.

(Councilwoman Calas exited the meeting at 7:19 P.M. and reentered at 7:22 P.M. with Councilman Smith exiting the meeting at 7:22 P.M.)

**Item 54 (e) - Bicycle
Path - Master Plan**

City Administrator Bien stated that the City Council has received a detailed report from its consultant and that the recommendation for the Bike Path Master Plan has been submitted to the Parks and Recreation Commission as well as to the Planning Commission. Following the receipt of their recommendations, the City Council has not made an actual determination regarding the Bike Path Master Plan. Copies of the Master Plan were provided as prepared by JHK and Associates, dated January, 1979.

Mayor Bridgers recalled the trip made by some members of the City Council with the Parks and Recreation Commission to Port Hueneme to look at their Master Plan. Parks and Recreation Director Homan described the Port Hueneme bike path which was adjacent to a storm drain and that previously there had been some discussion about putting a bike path on the shoulder of the Dominguez channel from Carson Street to the Carson Mall.

(Councilman Smith reentered the meeting at 7:30 P.M.)

Mayor Bridgers further indicated that there was discussion at one time regarding a concept whereby the bike path would be outlined in the street using a different colored stripe. He stated that former Public Works Director Wykoff was in favor of that concept but following the compilation of the accident report, this idea was abandoned by both Mr. Wykoff and Director McMichael. They felt that the bicyclists were given a false sense of security with these painted lines. Accidents in cities using these lines were higher than those cities without any lines. Mayor Bridgers referred to another plan which was once discussed but never pursued. That plan was to be north of the shopping center and utilizing the median divider with traffic signals for the bicyclists.

Copies of the Bicycle Master Plan as prepared by JHK and Associates, dated January 1979 were provided to the Council. The three (3) classes of the Master Plan as outlined were:

Class I: A graded and surfaced pathway on a completely separated right-of-way designated for the exclusive use of bicycles. Advantages of this type facility include total separation of bicycles from motor vehicles and pedestrians. Potential conflicts are eliminated. The construction of the separated facility involves right-of-way acquisition, pavement surfacing, etc., which requires significant expenditures.

Class II: A restricted lane on the surfaced roadway of an existing public street designated for the exclusive or semi-exclusive use of bicycles. This type is much less expensive than Class I, since the existing street surface is utilized. The route is marked with appropriate signs and pavement markings to define the type of use. In many instances this facility requires removal of curb parking in high-occupancy areas. Since the bicycle lane is part of the street, motorists may cross lanes to enter and exit the driveways. They can violate the bicyclist's right-of-way by illegally driving or parking in the lane. This increases the accident potential.

Class III: A shared right-of-way which must accommodate both motorists and bicyclists. This type of route usually consists only of signs, designating a preferred bicycle route. If Class I or II facilities cannot be implemented, this treatment provides a guide to the bicyclist's destination. Bicyclists must compete with autos, trucks and buses for a share of the roadway. Bicyclists are more vulnerable to collisions with higher speed, heavier vehicles on Class III facilities. Bicyclists must ride close to right-hand edge of the roadway and are thus susceptible to accidents resulting from storm drains, gratings, roadway debris and poor pavement joints between the gutter and roadway.

Mr. Ed Ruzak, consultant with JHK and Associates, discussed the three(3) classes of the Master Plan as 1) a graded surface pathway separated from the street; 2) a bicycle lane on a street and marked with a stripe, with or without "No Parking" signs where the bicyclist would travel on the street within the lane; and 3) a bike route where a sign would be placed saying "Bicycle Route".

(Mayor Bridgers exited the meeting at 7:33 P.M. and reentered at 7:34 P.M.)

There was discussion regarding bicyclists using sidewalks and that regardless of which plan is utilized, bicyclists would still be able to ride on any street in any portion of the community, safe or unsafe. Favorable aspects of bicycle riding including the benefits of exercise and saving gasoline were mentioned.

Mayor Bridgers moved to approve a combination of Classes I and II, having a graded surface and utilizing signs and seconded by Smith.

Discussion ensued regarding where a path would be broken up by narrow bridges, streets or sidewalks, where the path would be terminated, where there would be a path on only one side of a street - creating a dangerous 2-way bicycle lane, streets with no markings where bicyclists would interfere with the flow of traffic, the Vehicle Code as it relates to bicyclists, and that if a "No Parking" sign is not posted, a bicyclist could be hit by a car door opening or could hit the car.

Division Engineer Larry Sheehan stated that the Public Works Department is opposed to Class II because of the dangers to the cyclists and car owners.

(Mayor Pro Tem Mills exited the meeting at 7:47 P.M.)

Mayor Bridgers amended the motion to Approve the Master Plan, Class I in concept and Class II could be used but, that the matter be cleared with the Public Works Department based upon their objections regarding parking signs, and accepted by the second.

Councilman Egan stated that before anything is done, Class I, II or III, that everything should be cleared through the Public Works Department and was agreed to by Councilman Smith.

The motion as amended was unanimously carried with Mills absent.

(Mayor Pro Tem Mills reentered the meeting at 7:52 P.M.)

ADJOURNMENT

The meeting was ADJOURNED at 7:52 P.M. on motion of Egan, seconded by Smith and unanimously carried.

Thomas G. Mills
(ACTING) MAYOR

ATTEST:

Theresa K. K... ..
CITY CLERK

APPROVED AND ADOPTED BY CITY COUNCIL E.T. <u>Sept 2, 1980</u>

U.C. BERKELEY LIBRARIES



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